REMARKS

This application has been amended to specifically recite in the Specification on page 7 that in one embodiment of the invention the dipole antenna 22 comprises a dipole having a length of one wavelength at the output of either the signal generator 12 or the signal generator 14. This description of one embodiment of the invention is supported in the application as filed, with reference to Claims 8, 17, 26 and 30. Thus, no new matter has been added to the application.

Claims 1-4 have been canceled by this amendment. Claims 11-14 have been amended to more specifically define the analyzer signal as set forth in independent Claim 10 as generated by an antenna receiving an harmonic intermodulation output. Thus, Claims 11-14 define an harmonic article identification system in compliance with 35 U.S.C. § 112, first paragraph. Claim 18 has also been amended to more specifically define Applicants' method of harmonic article identification and thus now complies with 35 U.S.C. § 112, second paragraph. Claims 22 and 23 have also been amended to further define the analyzer signal and harmonic intermodulation output generated by at least one RF diode carried by an article. Thus, Claims 22 and 23 are in compliance with 35 U.S.C. § 112, first paragraph. In addition, Claim 31 has been amended to further define Applicants' method of harmonic article identification by reciting radiating at least one semiconductor device carried by an article for identification with at least two RF signals.

Claims 1-4 were rejected under 35 U.S.C. § 102(b) as being anticipated by Mawhinney (U.S. Patent No. 4,646,090), hereinafter *"Mawhinney"*. Further, Claim 4 was rejected under 35 U.S.C. § 103(a) as being unpatentable under *Mawhinney*. Claims 1-4 have been canceled from the application.

Claims 5-7, 9-11, 13, 15, 16 and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Mawhinney* in view of Nysen (U.S. Patent No. 6,433,671 B1), hereinafter *"Nysen"*. Claims 19-21, 24, 25, 28, 29 and 31-33 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Mawhinney* in view of *Nysen* and Dames, et al. (U.S. Patent No. 6,371,379 B1), hereinafter *"Dames"*. Additionally, Claim 27 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over *Mawhinney* in view of *Nysen* and *Dames, et al.* as applied to Claim 24 and further in view of Shimamura, et al. (U.S. Patent No. 6,094,133), hereinafter *"Shimamura"*.

While the following discussion focuses on features of Applicants' Claims, the only proper way of evaluating the claims is considering all the features of the claims as comprising the claimed system and not considering features individually. A claimed invention is unpatentable if the differences between it and the prior art "are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art". 35 U.S.C. § 103(a); *see Graham v. John Deere Co.,* 148 USPQ 459, 465 (1966). The ultimate determination of whether an invention is or is not obvious is a legal conclusion based on underlying factual inquiries including: (1) the scope and content of the prior art; (2) the level of ordinary skill in the prior art; (3) the differences between the claimed invention and the prior art; and (4) objective evidence of nonobviousness. *See Graham,* 148 USPQ at 467; *Miles Labs., Inc. v. Shandon Inc.,* 27 USPQ2d 1123, 1128 (Fed.Cir.1993).

Measuring a claimed invention against the standard established by Section 103 requires the oft-difficult but critical step of casting the mind back to the time of invention, to consider the thinking of one of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field. See, e.g., *W.L. Gore & Assocs., Inc. v. Garlock, Inc.,* 220 USPQ 303, 313 (Fed.Cir.1983). Close adherence to this methodology is especially important in the case of less technologically complex inventions, where the very ease with which the invention can be understood may prompt one "to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher" *Id.*

Further, case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references. See, e.g., *C.R. Bard, Inc. v. M3 Sys., Inc.,* 48 USPQ2d 1225, 1232 (Fed.Cir.1998). The Examiner must identify specifically the reasons one of ordinary skill in the art would have been motivated to select the references and combine them. The Examiner can satisfy the burden of obviousness in light of a combination "only by showing some objective teaching [leading to the combination]"). See, e.g., *In re Fine,* 5 USPQ2d 1596, 1600 (Fed.Cir.1988).

Combining prior art references without evidence of a suggestion, teaching, or motivation simply makes the Applicants' disclosure a blueprint for piecing together the prior art to defeat patentability, the essence of hindsight. The invention must be viewed not with

the blueprint drawn by the applicant, but by the state of the art that existed at the time the application was filed. Evidence of a suggestion, teaching, or motivation to combine may flow from the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved. However, the range of sources available does not diminish the requirement for actual evidence. That is, the showing must be clear and particular. *See, e.g., C.R. Bard,* 48 USPQ2d at 1232. Conclusionary statements by the Examiner regarding the teaching of multiple references standing alone, is not "evidence".

The Examiner rejects Claims 5-7, 9-11, 13, 15, 16 and 18 under 35 U.S.C. § 103(a) as being unpatentable over *Mawhinney* in view of *Nysen*. Applicants respectfully traverse these rejections for the reasons discussed below. The Examiner asserts that *Mawhinney* differs from the claims in that *Mawhinney* does not teach using a signal analyzer coupled to the antenna and responsive to an analyzer signal. The Examiner further asserts that *Nysen* teaches using an analyzer for reconstructing the symbols from a detected modulation pattern. The Examiner then asserts that it would have been obvious to one skilled in the art to apply the teachings of *Nysen* to the system described in *Mawhinney*. Applicants respectfully submit that the combination of *Mawhinney* and *Nysen* fails to disclose or suggest Applicants' invention. Applicants respectfully traverse this rejection as neither *Mawhinney* or *Nysen,* alone or in combination, disclose the claimed invention.

The Examiner has failed to supply evidence of a suggestion, teaching, or motivation to combine what may be contained in the prior art references themselves, the knowledge of one of ordinary skill in the art, or, in some cases, from the nature of the problem to be solved. Conclusionary statements by the Examiner regarding the teaching of multiple references, standing alone, is not "evidence". As acknowledged by the Examiner, *Mawhinney* does not teach using a signal analyzer coupled to an antenna and responsive to an analyzer signal. *Nysen* discloses a receiver that must determine a type of tag, if any, within an interrogation window, and subsequently track a re-radiated signal which is received simultaneously, and which is modulated both based on the emitted non-stationary frequency sequence and an internal modulation scheme, as well as a re-radiated signal which may be delayed in time. Thus, the *Nysen* system is significantly more complex than *Mawhinney* and the analyzer as referred to in column 10, lines 52-56, reconstructs symbols from a detected modulation pattern as a part of an RF-ID tag reader and thus finds application with the system of

Mawhinney. Inasmuch as a claim must be read in view of the specification, the analyzer of *Nysen* cannot be equated to the analyzer as set forth in Applicants' claims as now rejected.

The Examiner rejects Claims 19-21, 24, 25, 28, 29 and 31-33 under 35 U.S.C. § 103(a) as being unpatentable over *Mawhinney* in view of *Nysen* and *Dames, et al.* Applicants respectfully traverse these rejections for the reasons discussed previously with reference to the combination of *Mawhinney* and *Nysen.* Again, the Examiner has failed to provide evidence of a suggestion, teaching, or motivation to combine the prior art references of *Mawhinney* in view of *Nysen* as discussed previously. Further, where in *Mawhinney* is there any suggestion, teaching or motivation to combine *Mawhinney, Nysen,* and *Dames, et al.?* Conclusionary statements by the Examiner regarding the teaching of multiple references standing alone, is not "evidence."

The Examiner rejects Claim 27 under 35 U.S.C. § 103(a) as being unpatentable over *Mawhinney* in view of *Nysen* and *Dames, et al.* as applied to Claim 24, and further in view of *Shimamura, et al.* Again, the Examiner makes only conclusionary statements regarding the teaching of these multiple references and this alone is not "evidence". The rejection of Claim 27 as being unpatentable over *Mawhinney* in view of *Nysen* and *Dames, et al.* as applied to Claim 24 fails for the reasons discussed previously with reference to the combination of *Mawhinney* with *Nysen.* There is no display suggested and there is no inherency in *Mawhinney* to provide a display thus the rejection of Claim 27 can only be based on a hindsight reconstruction using Applicants' description as a blueprint for piecing together the prior art.

Reconsideration and allowance of all the claims remaining in the application is respectfully requested.

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It is believed that no fee is due. If this is incorrect, the Commissioner is hereby authorized to charge any fees required by this paper to Deposit Account No. 02-0384.

Respectfully submitted,

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MARKED-UP VERSION OF SPECIFICATION AND CLAIM AMENDMENTS

For the convenience of the Examiner, all claims have been presented whether or not an amendment has been made. The Specification and Claims have been amended as follows:

IN THE SPECIFICATION

Please replace the paragraph beginning on line 31 of page 6 with the following paragraph:

(Amended) Radiating the diode 20 with the first frequency from the signal generator 12 and the second frequency from the signal generator 14 results in the diode producing a third order intermodulation product. This harmonic signal is detected by a dipole antenna 22 that outputs an analyzer signal to a spectrum analyzer 24. **In one embodiment of the invention, the dipole antenna 22 comprises a dipole having a length of one wavelength at the output of either the signal generator 12 or the signal generator 14.** The spectrum analyzer 24 responds to the analyzer signal to generate a signature display 26 that identifies the presence of the diode 20 and the intermodulation output. The spectrum analyzer 24 also outputs a signature signal for additional processing of the analyzer signal from the dipole antenna 22.

IN THE CLAIMS:

For the convenience of the Examiner, all pending claims are shown below whether or not an amendment has been made.

1.   **(Canceled).**

2.   **(Canceled).**

3.   **(Canceled).**

4.   **(Canceled).**

5.   An harmonic article identification system, comprising:

at least one semiconductor device carried by an article and responsive to at least two RF signals to generate an harmonic intermodulation output;

an antenna receiving an harmonic intermodulation output and generating an analyzer signal; and

a signal analyzer coupled to the antenna and responsive to the analyzer signal to identify the article carrying the at least one semiconductor device.

6.   The harmonic article identification system as in Claim 5 wherein the at least one semiconductor device comprises at least one RF diode.

7.   The harmonic article identification system as in Claim 6 wherein the at least one diode responds to RF signals in a frequency range from about 24.0 GHz to about 24.1 GHz.

8.   The harmonic article identification system as in Claim 5 wherein the antenna comprises a dipole having a length of one wavelength at one of the at least two RF signals.

9.   The harmonic article identification system as in Claim 5 wherein the at least one semiconductor device comprises a signature identification of the article carrying the at least one semiconductor device.

10.   An harmonic article identification system, comprising:

a first signal generator operating to generate an RF signal at a first frequency;

a second signal generator operating to generate an RF signal at a second frequency;

at least one RF diode carried by an article and responsive to the first and second frequencies to generate an harmonic intermodulation output;

an antenna receiving the harmonic intermodulation output and generating an analyzer signal; and

a signal analyzer coupled to the antenna and responsive to the analyzer signal to identify the article carrying the at least one RF diode.

11.   **(Amended)**   The harmonic article identification system as in Claim 10 wherein **[the signal analyzer respond to]** the analyzer signal **[by]** <u>comprises a</u> subtraction of the first frequency signal from the second frequency signal.

12.   **(Amended)**   The harmonic article identification system as in Claim 10 wherein **[the signal analyzer responds to]** the analyzer signal <u>varies</u> in accordance with the expression:

2F1 - F2,

wherein:

      F1 equals the first frequency, and

      F2 equals the second frequency.

13.   **(Amended)**   The harmonic article identification system as in Claim 10 wherein **[the signal analyzer responds to]** the analyzer signal **[by]** <u>comprises a</u> subtraction of the second frequency signal from the first frequency signal.

14.   **(Amended)**   The harmonic article identification system as in Claim 10 wherein **[the signal analyzer responds to]** the analyzer signal <u>varies</u> in accordance with the expression:

2F2 - F1,

wherein:

      F1 is the first frequency, and

F2 is the second frequency.

15.   The harmonic article identification system as in Claim 10 wherein the at least one RF diode comprises a signature identification of the article carrying the at least one RF diode.

16.   The harmonic article identification system as in Claim 10 wherein the at least one RF diode responds to RF signals in a frequency range from about 24.0 GH to about 24.1 GHz.

17.   The harmonic article identification system as in Claim 10 wherein the antenna comprises a dipole having a wavelength determined by either the first frequency or the second frequency.

18.   **(Amended)**   A method for harmonic article identification, comprising:

generating at least two RF signals at separate frequencies;

generating an harmonic intermodulation signal by at least one RF diode carried by an article and responsive to the at least two RF signals;

generating an analyzer signal from an antenna receiving the **[third]** harmonic intermodulation **[output]** signal; and

generating an article identification signature by analyzing the analyzer signal from the antenna.

19.   The method for harmonic article identification as in Claim 18 further comprising storing the article signature for subsequent identification of the article.

20.   The method for harmonic article identification as in Claim 19 further comprising scanning the stored article signatures for identification of an article.

21.   The method for harmonic article identification as in Claim 20 further comprising generating an article identification in response to scanning the stored article signatures.

22.   **(Amended)**   An harmonic article identification system, comprising:

a first signal generator outputting an RF signal at a frequency of 24.0 GHZ;

a second signal generator outputting an RF signal at a frequency of 24.1 GHZ;

at least one RF diode carried by an article and responsive to the 24.0 GHZ frequency and the 24.1 GHZ frequency to generate **[a third]** **an** harmonic intermodulation output;

a dipole antenna receiving the **[third]** harmonic intermodulation output and generating an analyzer signal **varying in accordance with the expression:**

> **2F1 - F2,**
>
> **wherein:**
>
> > **F1 equals the 24.0 GHZ frequency, and**
> >
> > **F2 equals the 24.1 GHZ frequency**; and

a signal analyzer coupled to the dipole antenna and responsive to the analyzer signal to identify the article carrying the at least one RF diode.**[in accordance with the expression:**

> **2F1 - F2,**
>
> **wherein:**
>
> > **F1 equals the 24.0 GHZ frequency, and**
> >
> > **F2 equals the 24.1 GHZ frequency.]**

23.   **(Amended)**   An harmonic article identification system, comprising:

a first signal generator outputting an RF signal at a frequency of 24.0 GHZ;

a second signal generator outputting an RF signal at a frequency of 24.1 GHZ;

at least one RF diode carried by an article and responsive to the 24.0 GHZ frequency and the 24.1 GHZ frequency to generate a third harmonic intermodulation output;

a dipole antenna receiving or any other tuned antenna receiving the third [RF] harmonic intermodulation output and generating an analyzer signal **varying in accordance with the expression:**

2F2 - F1,

wherein:

F1 equals the 24.0 GHZ frequency, and

F2 equals the 24.1 GHZ frequency; and

a signal analyzer coupled to the dipole antenna and responsive to the analyzer signal to identify the article carrying the at least one RF diode.[**in accordance with the expression:**

2F2 - F1,

wherein:

F1 equals the 24.0 GHZ frequency, and

F2 equals the 24.1 GHZ frequency.]

24.   An identification system for articles carrying at least one semiconductor device generating an harmonic intermodulation output, comprising:

a spectrum analyzer responsive to an harmonic intermodulation output generated by at least one semiconductor device carried by an article, the spectrum analyzer generating an identification signal;

a signature memory storing the identification signatures of at least one article for identification;

a comparator responsive to the identification signal of the spectrum analyzer and coupled to receive the identification signatures of at least one article for identification from the signature memory, the comparator generating an output identifying an article carrying at least one semiconductor device from the stored identification signatures.

25.   An identification system as in Claim 24 further comprising an antenna receiving the harmonic intermodulation output generated by the at least one semiconductor device carried by an article and generating an analyzer signal, the spectrum analyzer responsive to the analyzer signal to generate the identification signal.

26.   The identification system as in Claim 25 wherein the antenna comprises a dipole having a length of one wavelength at one of at least two RF signals.

27.   The identification system as in Claim 24 further comprising a display responsive to the signal generated by the comparator to indicate identification of an article.

28.   The identification system as in Claim 24 further comprising:

a first signal generator operating to generate an RF signal at a first frequency;

a second signal generator operating to generate an RF signal at a second frequency signal; and

wherein the at least one semiconductor device carried by the article responds to the first and second frequencies to generate the harmonic intermodulation output.

29. The identification system as in Claim 28 further comprising an antenna receiving the harmonic intermodulation output from the article carrying the at least one semiconductor device and generating an analyzer signal; and

wherein the spectrum analyzer responds to the analyzer signal to generate an identification signal.

30. The identification system as in Claim 29 wherein the antenna comprises a dipole having a length of one wavelength at either the first frequency or the second frequency.

31.   **(Amended)**   A method for harmonic article identification, comprising:

generating at least two RF signals at separate frequencies;

radiating **with the at least two RF signals** at least one semiconductor device carried by an article for identification;

generating an harmonic intermodulation signal by the at least one semiconductor device carried by the article and radiated with the at least two RF signals;

generating an analyzer signal from an antenna receiving the harmonic intermodulation output;

comparing the analyzer signal with one or more stored identification signatures, the comparator generating a signal to identify the article carrying the at least one semiconductor device from the stored identification signatures.

32.   The method for harmonic article identification as in Claim 31 further comprising storing the identification signatures for subsequent comparison with analyzer signals.

33.   The method for harmonic article identification as in Claim 32 wherein comparing the analyzer signal with identification signatures comprises:

scanning the stored signatures for comparison with the generated analyzer signal; and

generating an article identification signal in response to a comparison between one of the stored identification signatures and the analyzer signal.